

**Notice of Allowability**

Application No.

10/085,193

Examiner

Tom P. Duong

Applicant(s)

BUXBAUM, ROBERT E.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/28/06.
2. ☒ The allowed claim(s) is/are 14, 15, 20-23, 25, 29-37 and 39-42.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                      |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance              |
|  | 9. <input type="checkbox"/> Other _____.   |

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Avery N. Goldstein on April 25, 2007.

The application has been amended as follows:

In the claims:

14. (Currently amended) The gas purification system of claim ~~[[2]]~~33 wherein said ~~heater~~ heat conduit has flowing therein a sweep gas.

20. (Currently amended) A gas purification system comprising:  
a reactor operating above room temperature having a reactor volume and a reactor wall, the reactor wall having an interior side and an exterior side, and defining a communicating portal therebetween for a mixed gas flow;  
a gas selective membrane within the reactor volume, said gas membrane in contact with the mixed gas flow and selectively passing a constituent gas of the mixed gas flow therethrough, such that a raffinate of the mixed gas flow is retained in contact with said membrane;

a reaction catalyst coating in contact with the exterior side of the reactor wall;

an outlet channel for removing said raffinate from contact with said selective membrane;

a raffinate compressor disposed in fluid communication with said outlet channel expanding said raffinate ~~and simultaneously compressing a liquid feed to said reactor;~~  
and

a passageway for the removal of the constituent gas from the interior of said reactor.

25. (Currently Amended) The gas purification system of claim 20 having at least one component coupled thereto, said component being selected from a group consisting of: a raffinate burner, a mixed gas flow feed pump, a raffinate back pressure controller, and an oxygen sensor.

30. (Currently amended) A gas purification system comprising:

a feed pump;

a reactor-purifier system for generating purified hydrogen by transmission through a hydrogen selective membrane and a raffinate stream from a feed, the feed provided by said feed pump, said reactor-purifier system comprising:

a reactor having a reactor volume and a reactor wall, the reactor wall having an interior side and an exterior side, and defining a communicating portal therebetween for a feed;

a heat conduit within the reactor volume having a conduit wall, the conduit wall having an interior side and an exterior side, and defining a channel therethrough for passing a heated material through the reactor volume;

a reaction catalyst coating in contact with the exterior side of the conduit wall;

a burner for combusting the raffinate produced by said reactor-purifier system to yield a heated exhaust gas, heat from said burner being used to heat said reactor-purifier system;

a back pressure regulator intermediate between said reactor and said burner and regulating flow of said raffinate therebetween;

a source of air mixed with said raffinate before combustion in said burner; and

a mix controller adjusting the ratio of said raffinate in said air provided to said burner.

33. (Currently amended) ~~The system of claim 29 wherein said reactor-purifier system is the~~ A membrane reactor gas purification system comprising:

a reactor having a reactor volume and a reactor wall, the reactor wall having an interior side and an exterior side, and defining a communicating portal therebetween for a mixed gas flow;

a heat conduit within the reactor volume having a conduit wall, the conduit wall having an interior side and an exterior side, and defining a channel therethrough for passing a heated material through the reactor volume;

a reaction catalyst coating in contact with the exterior side of the conduit wall;

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a gas selective membrane within the reactor volume disposed between the reactor wall and the conduit wall, said gas membrane in contact with the mixed gas flow and selectively passing a constituent gas of the mixed gas flow therethrough, such that a raffinate of the mixed gas flow is retained in contact with said membrane;

an outlet channel for removing said raffinate from contact with said selective membrane; and

a passageway for the removal of the constituent gas from the interior of said reactor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom P. Duong whose telephone number is (571) 272-2794. The examiner can normally be reached on 8:00AM - 4:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Duong  
April 30, 2007

TD



Glenn Caldarola  
Supervisory Patent Examiner  
Technology Center 1700